

**College of Science and Technology
Department of Physics
Course Syllabus**

PHYS–110: Fundamentals of Physics II

I. Course Description

This is a continuation of PHYS 109 (Non – Calculus base). The course deals with a variety of applications to the life sciences. Content covers wave phenomena, optics, electricity, magnetism and in brief atomic and nuclear theory. There are three lectures per week. Corequisite: PHYS 112.

II. Rationale

This course gives students majoring in the life sciences an introduction to physics using the language of algebra and trigonometry.

III. Competencies

- *Personal and Professional Responsibility.* Students will demonstrate personal and professional proficiencies in pursuit of academic excellence in all courses pursued.
- *Subject Matter and Presentation Skills.* Performance in courses as evidenced by final grades will document success levels in the mastery of subject matter, written and oral communication skills.
- *Planning and Organization.* Students will demonstrate ability to plan and organize personal and professional skills. Students will also demonstrate an ability to generalize techniques to structure activities that will impact teaching and learning.

IV. Behavioral Objectives

At the end of this course, the student will be able to:

- Understand the physical environment and its relationship to man.
- Gain knowledge and understanding of scientific laws, principles, and theories.
- Develop the ability to think critically and independently, and to reason effectively.
- Be proficient in oral articulation and written expression.

- Be adept in general and scientific terminology.

V. Course Content

- Vibrations and Waves
- Sound
- Geometric Optics: Reflection and Refraction of Light
- Mirror and Lenses
- Physical Optics: The Wave Nature of Light
- Optical Instruments
- Electric Charge, Force, and Energy
- Electric Potential, Energy, and Capacitance
- Electric Current and Resistance
- Basic Electric Currents
- Magnetism
- Electromagnetic Induction
- Relativity
- The Nucleus
- Nuclear Reactions and Elementary Particles

VI. Learning Activities

Lecture/Note-taking

Solving Textbook Problems in Physics

VII. Special Course Requirements

Students should develop proficiency in the use of handheld calculators. It is recommended that the student use a calculator with scientific functions.

VIII. Evaluation Procedures

A lecture quiz will be given approximately every two weeks. Each quiz will be announced one week in advance. Exams will consist of multiple choice items, essay questions, and problem solving

A major exam will be given at mid-term and at the end of the semester to determine the students' cumulative knowledge. The grade in the course will be calculated using the following formula and scale:

Quizzes and Exams	=	75
Homework	=	25
Total	=	100

Grading scale:	A	=	90 or more points
	B	=	80 – 89 points
	C	=	70 – 79 points

D = 60 – 69 points
F = 59 or below

IX. References

Textbook:

Wilson, J. D., *College Physics, 3rd Ed.*, Saunders College Publishing, Fort Worth, 1996.

Recommended Journals

The Physics Teacher

Physics Today

Computing in Science & Engineering

Journal of Undergraduate Research

Journal of College Science Teaching